

## C Area Burning/Rubble Pit

### Background

The C Area Burning/Rubble Pit is located west of C Area on a ridge between two tributaries of Fourmile Branch (FMB) on the Savannah River Site (SRS). The burning/rubble pit was a shallow, unlined, earthen pit measuring approximately 350 feet long by 25 feet wide with depths varying from 8 to 12 feet.

Aerial photographs indicate that an earlier C Area Burning Rubble Pit was located approximately 200 feet northeast of the current pit. This pit was closed and backfilled prior to excavation of the C Area Retention Basin, removing 70 percent of the footprint of the old pit. The current pit was excavated in the early 1960s, and was used until 1973 for the disposal and monthly burning of organic liquids of unknown origin and use such as waste oils, rags, paper, plastics, and rubber materials. After 1973, the pit was filled with construction debris such as concrete, brick, tile, asphalt, wallboard, lumber, rubber, and non-returnable empty drums. When the pit was filled to capacity, it was backfilled with approximately 2 feet of native soil to grade level. All burning/rubble pits were closed by 1981.

### Environmental Concerns

SRS environmental engineers conducted preliminary soil gas surveys in and around the pit in 1985 and 1986. The surveys showed chlorinated solvents, such as trichloroethylene (TCE) and tetrachloroethylene (PCE), were in the soil. In 1989, SRS conducted further investigations by taking soil samples and using ground-penetrating radar to define the pit boundaries and to locate buried objects. The soil and subsurface soil in the pit was found to contain dioxins.

From 1995 through 1998, characterization studies were expanded by installing monitoring wells and using cone penetrometer techniques. These studies confirmed the presence of volatile organic compounds (VOCs), TCE and PCE in the vadose zone and in the groundwater beneath the pit. The studies also showed the groundwater to be marginally contaminated with tritium from other sources in C Area. The tritium will be addressed as part of the C Reactor Groundwater Operable Unit. Additionally, groundwater outcropping into the Twin Lakes area was found to be contaminating the surface water with vinyl chloride, a degradation product of the TCE, in the groundwater plume.

### Environmental Actions and Plans

In 1996, SRS conducted a Work Plan Characterization to determine the nature and extent of the contamination. Then in 1997, SRS submitted a Resource Conservation

Recovery Act (RCRA) Facility Investigation/Remedial Investigation and Baseline Risk Assessment (RFI/RI/BRA) to the U.S. Environmental Protection Agency (USEPA), and the South Carolina Department of Health and Environmental Control (SCDHEC). The investigation and BRA determined that the unit poses unacceptable risk to ecological and human receptors and the groundwater plume was found to be larger and more complex than originally anticipated.

In response to comments received on the RFI/RI/BRA, SRS submitted a plan to the regulatory agencies summarizing additional characterization studies, including a sampling plan, needed for the groundwater plume.

In 1998, SRS submitted an Interim Action Proposed Plan with two objectives; 1) to prevent direct contact with constituent of concern (COC) contaminated soils and to reduce infiltration to minimize further migration of Contaminant Migration Constituent of Concerns (CMCOCs) to the groundwater from soils within and beneath the pit; and 2) to treat the area in the vicinity of the pit within the 25,000 ppb VOC isoconcentration contour in order to reduce the VOC contamination in the groundwater. The proposed plan recommended covering the contaminated pit with native soil, installing a soil vapor extraction (SVE) system to remove VOCs from the vadose zone, and installing an air sparging system to remove VOCs from the groundwater. In January 1999, construction began on the Interim Action, and, in September 1999, the SVE system went into operation. In June 2000, the air sparging system went online and through September 2001 has removed over 1800 pounds of TCE.

As part of the of the interim action, the USEPA implanted VOC monitoring ports into the vadose zone using cone penetrometer technology to independently address the residual concentrations of TCE in the vadose zone. The Consortium for Risk Evaluation with Stakeholder Participation (CRESP) developed a vadose zone model of the data taken from these implants, during operation of the SVE system and shutdown for rebound tests, to provide an evaluation of the effectiveness of the system.

Additional characterization, including monitored natural attenuation sampling in the groundwater plume and the seepage areas into FMB and the Twin Lakes was performed in 2000 and 2001 to fill in characterization gaps identified in a regulator meeting. In June 2002, a revised RFI/RI/BRA, which incorporates the 2000 and 2001 characterization data, was approved by the USEPA and SCDHEC.

In 2003, the Corrective Measures Study/Feasibility Study (CMS/FS) began and will be completed in 2004. Also in 2004, a proposed plan summarizing the studies and cleanup alternatives and a recommendation for the preferred remedial action will be submitted to the USEPA and SCDHEC. Following the public involvement process, the agencies will issue a Record of Decision to complete the final remedial action.